

**What is claimed is:**

1. A buffer installation method supporting a detection-based and avoidance-based consistency maintenance policy in a shared disk-based multi-DBMS, the method  
5 comprising the steps of:

(a) when a page identifier, access modes (read, write) and consistency maintenance scheme (detection, avoidance) are selected and a buffer is requested to install, calculating a buffer locking mode required based on a following matrix (SMTBM); and

(b) requesting a global locking manager to lock a buffer in the calculated buffer  
10 locking mode in case that an the obtained buffer locking mode is less than the calculated buffer locking mode or a version of a loaded block is lower than a required version when detection-based consistency maintenance scheme is selected, and approving buffer installation otherwise,

wherein a detection-based consistency maintenance scheme and an avoidance-based  
15 consistency maintenance scheme are integrated in a single procedure to interwork with each other.

Policy \ Access	Read	Write
	WS	WX
Detection	WS	WX
Avoidance	S	X

2. The method as claimed in claim 1, wherein the step (b) includes the step of:

(b-1) when succeeding to receive a block in state that the buffer is requested to lock,  
20 approving to install the buffer; and

(b-2) when failing to receive a block, reading the block from a disk to approve to install the buffer.

3. A method of processing a global locking request in a DBMS operated in a shared disk-based multi-system, the method comprising the steps of:

(a) obtaining a locking by an update authority (WX, X) in a system that has obtained a requested locking, transferring a corresponding block to a system that cached the corresponding block, and requesting to update a lock authority;

(b) determining whether the system is not compatible to a requested lock according to a following matrix (BLCM) in the system that has obtained the requested lock in a read mode (WS, S); and

(c) instructing a system to update the lock authority, the system being determined not to be compatible.

Request Convention	WS	S	WX	X
NL	T	T	T	T
WS	T	T	T	F
S	T	T	F	F
WX	T	F	F	F
X	F	F	F	F

4. A method of a global locking manager for processing a locking authority update request and a block transfer request in a DBMS operated in a shared disk-based multi-system, the method comprising the steps of:

(a) when a current system has obtained a locking by an update authority (WX, X) and a current block is updated, writing a log forcibly about the current block based on write ahead logging (WAL) and writing a corresponding block on a disk or transferring the corresponding block through a transfer path;

(b) updating a currently owned buffer locking mode to satisfy a buffer locking mode requested by a remote system using a following matrix (BLRM); and

(c) removing a corresponding block completely when returning a buffer locking as a result of the step (b), and completing to update an ownership otherwise.

Request Convention	WS	S	WX	X
WS	WS	WS	WS	NL
S	S	S	WS	NL
WX	WX	S	WS	NL
X	WX	S	WS	NL